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1969 AIR FORCE EASTERN TEST RANGE COMPUTER "PRINTED" RAWINSONDE (SKEW-T) ANALYSIS

Irving Kuehnast, Assistant Staff Meteorologist

June 1969

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Staff Meteorologist
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Patrick Air Force Base, Florida

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NOTICES

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Irving Kuehnast, Assistant Staff Meteorologist

FOREWORD

This report was prepared by Mr. Irving Kuehnast, Assistant Staff Meteorologist, Air Force Eastern Test Range, Patrick Air Force Base, Florida, 32925 over a period of three months.

Variation in format is permitted in the interest of economy, legibility, and to expedite publication.

Publication of this report does not constitute Air Force approval of the report's findings or conclusions. It is published only for the exchange and stimulation of ideas.

The report has been reviewed and publication approved.

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Staff Meteorologist, Air Force Eastern Test Range and
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ABSTRACT

This report is intended as a guide to forecasters using the Air Force Eastern Test Range computer "printed" rawinsonde (SKEW-T) analysis. Each meteorological parameter included in the computer printout is described to some extent as to what it is, how it is computed and developed, why it is included in the analysis, and its relationship to a SKEW-T analysis.

SECTION I

INTRODUCTION

The approach in the development of the printed rawinsonde analysis is directed toward computing and only that meteorological data that is directly applicable to forecasts in support of the Air Force Eastern Test Range missile and aircraft operations. In this light, it is considered a step beyond analysis.

INITIAL DEVELOPMENT

The initial computer analysis was developed in the Spring of 1967 with the purpose of producing a forecasting tool to aid the duty forecaster in forecasting Florida summertime thunderstorms. Single parameters were developed which described, to some extent, the Laws of Conservation of Momentum, Energy and Mass. These parameters were to be used to determine the thunderstorm development, intensity, movement and time of development. Some of these parameters have been discontinued. They were dropped primarily because they yielded information only indirectly related to thunderstorm and meteorological conditions. Further interpretation was required and, as a result, very little use was made of them. The reason for the non-use of these parameters provided the existing philosophy of the present printed analysis, this philosophy being that any data included in the printed analysis be used directly by the duty forecaster, with only a minimum of interpretation.

The 1968 and 1969 analyses are similar with the exception that the 1969 analysis contains more data and has more useful presentation, and more realistic limits on some of the parameters. The appendix shows the teletype output and a listing of the parameters for the years 1967 and 1968. The 1969 analysis follows.

1969 RAWINSONDE ANALYSIS

MILA STATION, M.I. FLORIDA 0045Z 16 MAY 1969 RAWINSONDE ANALYSIS

SIG LVL	ALT FT.	DIR DEG	SP KT	CLIMB WINDS		CLIMB T/DEV	TEMP (C)	TEMP -STRD	TEMP L/R	T-TD DIFF	INV TYP	CLOUDS AMT	CLOUDS TY	TURBC KT	TURBC IN
	50000	273	16	281	20	5.1	-70.7	-14.4	0	99.9	SUB	0		13	SV
TRP	49000	287	28	281	20	5.5	-70.7	-14.4	-2.2	99.9		0		13	SV
	48000	283	41	281	20	5.9	-68.5	-12.2	-2.0	99.9		0		14	SV
	47000	281	55	281	20	6.3	-66.5	-10.2	-1.5	99.9		0		4	
	46000	283	59	281	19	6.6	-65.0	-8.7	-2.8	99.9		0		4	
	45000	286	60	280	18	7.0	-62.2	-5.9	-0.4	99.9	SUB	0		4	
	44000	288	63	280	17	7.3	-61.8	-5.5	-0.5	99.9	SUB	0		10	SV
	43000	283	72	279	16	7.5	-61.3	-5.0	-1.1	99.9	SUB	0		13	SV
	42000	277	81	279	15	7.8	-60.2	-3.9	-1.6	99.9	SUB	0		7	MD
XWD	41000	[illegible]	[illegible]	[illegible]	14	8.1	-58.6	-2.3	-1.5	7.3	SUB	h-		3	
SHR	40000	277	86	280	12	8.4	-57.0	-0.7	-1.3	5.8	SUB	h+		21	SV
	39000	278	65	281	10	8 6	-55.7	.6	-1.4	4.9	SUB	.1	ST	15	SV
	38000	275	51	282	9	8.8	-54.3	2.0	-1.9	4.8		.1	CU	8	MD
	37000	271	43	283	7	9.0	-52.4	3.9	-2.2	4.8		.1	CU	2	
	36000	273	42	285	7	9.1	-50.2	6.1	-4.0	4.6		.1	CU	7	MD
	35000	280	38	287	6	9.2	-46.2	8.1	-2.1	4.5		.1	CU	6	MD
	34000	288	36	289	5	9.2	-44.1	8.2	-2.5	4.4		.1	CU	5	LT
	33000	296	36	290	4	9.3	-41.6	8.7	-2.8	3.8		.1	CU	1	
	32000	297	35	288	3	9.3	-38.8	9.6	-2.8	3.6		.2	CU	2	
	31000	298	33	284	2	9.3	-36.0	10.4	-2.8	4.2		.1	CU	7	MD
	30000	306	28	273	1	9.2	-33.2	11.2	-1.9	2.5		.2	CU	6	MD
	29000	315	24	239	0	9.2	-31.3	11.1	-2.1	3.0		.2	CU	4	
	28000	310	21	190	1	9.1	-29.2	11.2	-2.6	3.1		.2	CU	4	
	27000	301	20	166	1	9.0	-26.6	11.9	-2.2	4.3		.1	CU	1	
	26000	299	20	152	2	8.9	-24.4	12.1	-2.4	5.2		h+		1	
	25000	299	18	144	3	8.8	-22.0	12.5	-1.1	6.2	MST	h+		5	LT
	24000	307	14	139	3	8.6	-20.9	11.6	-1.2	7.3	MST	h-		6	MD
	23000	289	9	138	4	8.5	-19.7	10.8	-1.1	9.1	MST	C		6	MD
	22000	252	10	136	5	8.4	-18.6	10.0	-2.4	5.9		h+		4	
	21000	232	11	131	5	8.3	-16.2	10.4	-2.3	2.9		.2	CU	4	
	20000	217	8	126	5	8.3	-13.9	10.7	-1.8	3.6	MST	.2	ST	4	
	19000	223	4	123	6	8.1	-12.1	10.5	-1.3	2.6	MST	.3	ST	4	
	18000	131	0	121	6	8.0	-10.8	9.8	-1.7	2.3	MST	.3	ST	1	
	17000	92	1	121	6	7.9	-9.1	9.6	-1.5	1.6	MST	.5	ST	5	LT
	16000	272	4	121	7	7.8	-7.6	9.1	-1.6	2.9	MST	.2	ST	4	
	15000	264	8	120	7	7.7	-6.0	8.7	-1.7	.4	MST	1.0	ST	3	
	14000	243	9	118	8	7.7	-4.3	8.4	-2.2	4.2		.1	CU	2	
FRZ	13000	231	7	115	9	7.6	-2.1	8.6	-2.2	5.4		h+		4	
	12000	215	3	113	10	7.5	.1	8.9	-2.7	8.3		h-		4	
	11000	149	3	111	11	7.4	2.8	9.6	-1.2	12.7	SUB	C		1	
	10000	162	4	111	12	7.2	4.0	8.8	-1.2	99.9	SUB	0		1	
	9000	148	4	109	13	7.1	5.2	8.0	-1.4	5.8	SUB	h+		5	LT
	8000	111	7	108	14	7.0	6.6	7.4	-3.0	3.9		.1	CU	2	
	7000	111	10	108	15	6.9	9.6	8.5	.1	6.7		h-		1	
	6000	115	9	108	16	6.7	9.5	[illegible]	-2.5	.9		.7	CU	2	
	5000	107	11	107	18	6.7	12.0	6.9	-1.7	2.3		.3	ST	5	LT
	4000	107	16	107	19	6.7	13.7	6.6	-1.6	2.5		.3	ST	5	LT
	3000	112	21	108	20	6.7	15.3	6.2	-1.9	2.4		.3	CU	4	
	2000	109	25	106	20	6.8	17.2	6.2	-2.5	1.4		.6	CU	3	
	1000	103	24	105	17	7.2	19.7	6.7	-3.0	2.0		.4	CL	13	SV
SFC	11	110	12				22.7		2.1						
CCL	870			CONVECTIVE TEMP FCST (72.9F)											

SECTION II

DESCRIPTION OF COMPUTER "PRINTED" 1969 RAWINSONDE ANALYSIS

The analysis consists of fifteen colums of data for which values are computed and printed for each 1,000-foot interval from the surface to 50,000 feet. An additional column is required to identify each level from the surface to 50,000 feet. In addition, the convection condensation level and the convection temperature are computed and printed. Each meteorological parameter is discussed in the order in which it appears on the degree necessary to determine its operational use and relationship with the hand-plotted SKEW-T analysis. (See Figure 2).

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SIG	ALT	DIR	SP	CLIMB		CLIMB	TEMP	TEMP	TEMP	T/TD	INV	CLOUDS		TURBC	
LVL	FT	DEG	KT	WINDS		T-DEV	DEG C	/STD	L/R	DIFF	TYP	AMT	TY	KT	IN
XWD											MST		ST		SV
TRP											SUB		CU		MD
SHR											RDN				LT
FRZ															
SFC															

Figure 1. Column Listing of Computer Analysis Printout.

DEPARTMENT OF DEFENSE
USAF SKEW T, log p DIAGRAM

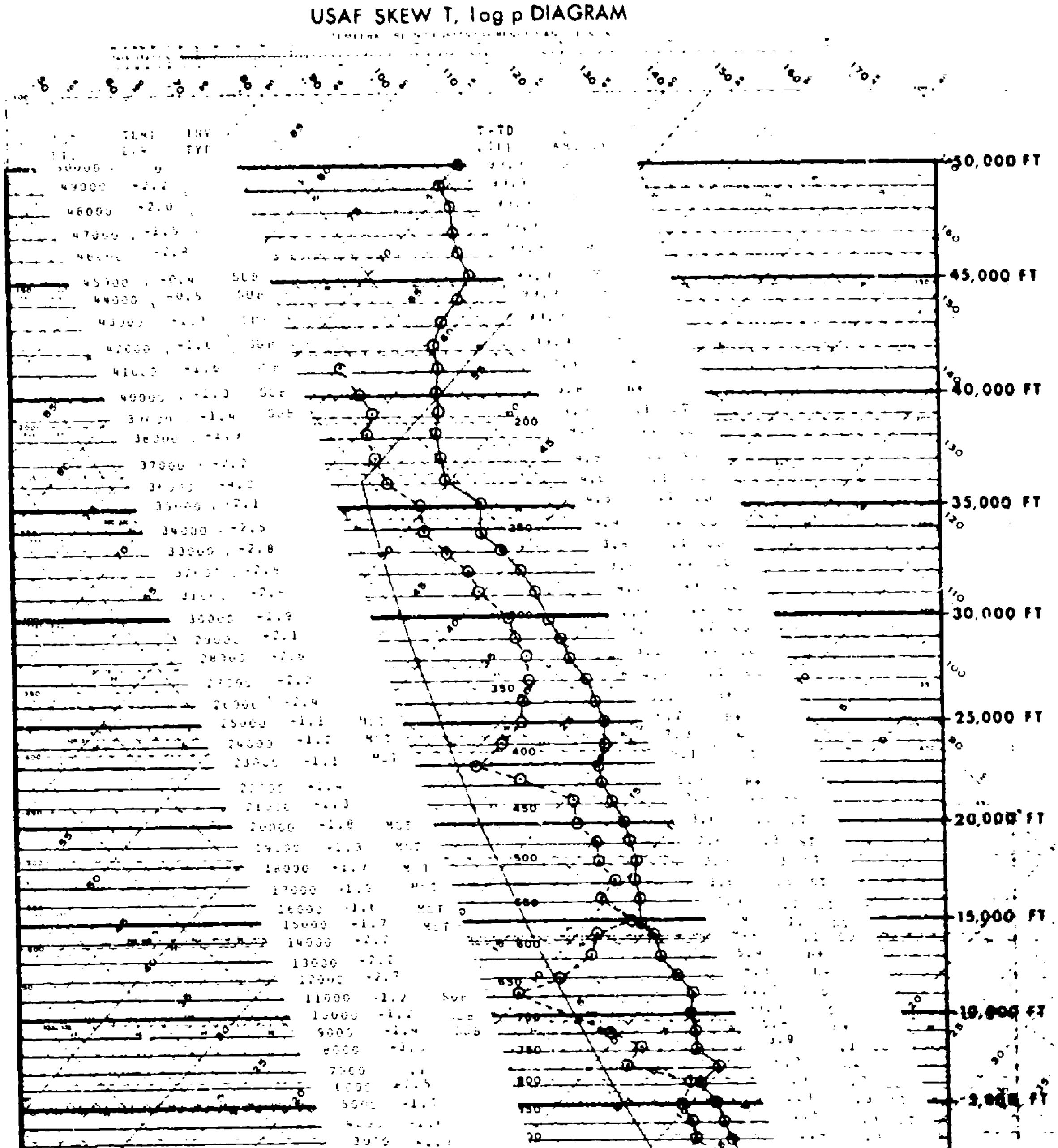

Figure 2

Column 1, SIG LVL (Significant Levels). Four significant levels are computed and printed: tropopause height, freezing level, maximum wind speed level, and maximum wind shear level.

a. TRP (Tropopause Level) is printed opposite the nearest computed tropopause level. The criterion for selecting the tropopause level is based on the Federal Meteorological Handbook #3 (Radiosonde Observations), Chapter B5, para 14.1.

b. FRZ (Freezing Level) is printed to the nearest 1,000 feet of the computed freezing level.

c. XWD (Maximum Wind Speed Level) is printed to the nearest 1,000 feet of the computed maximum wind speed level. Whenever XWD $\geq$ 50 knots, J+ is printed at each level if wind speed $\geq$ .9 XWD and J- if wind speed $\geq$ .8 XWD or < .9XWD.

d. SHR (Maximum Wind Shear Level) is printed to the nearest 1,000 feet of the computed maximum wind shear level. Maximum wind shear is not printed at the 1,000-foot altitude.

e. SFC (Surface Level) is printed opposite the surface mean seal level elevation.

Column 2, ALT FT (Altitude in Feet). The altitude is printed in 1,000-foot levels from 1,000-foot through 50,000-foot altitude. The station elevation is printed opposite the surface (SFC) in feet (MSL).

Column 3, DIR DEG (Wind Direction in Degrees). The wind direction is computed and printed to the nearest degree (with reference true North.

Column 4, SPD KTS (Wind Speed in Knots). The wind speed is computed and printed to the nearest knot.

Columns 5 and 6, CLIMB WINDS (Climb Winds). The climb wind is the mean wind direction and wind speed computed and printed for each 1,000 feet of altitude. The mean wind is the cumulative average wind direction and speed from the surface for each 1,000-foot level up to 50,000 feet.

Column 7, CLIMB T/DEV (Climb Mean Temperature Deviation). The climb temperature is the mean temperature deviation from the standard atmospheric temperature computed and printed to the nearest tenth of a degree centigrade. The mean temperature deviation is the cumulative average of the difference between the temperature (from the sounding) and the U.S. standard atmosphere temperature from the surface for each 1,000-foot level up to 50,000 feet. The climb mean temperature deviation is used to compute the fuel consumption, time of climb and distance traveled in climb for jet aircraft.

Column 8, TEMP -C- (Temperature in Degrees Centigrade). The temperature is computed and printed to the nearest tenth of a degree centigrade.

Column 9, TEMP/STD (Temperature less the Standard Atmospheric Temperature). The difference between the temperature of the atmosphere and the standard atmosphere temperature is computed and printed for the surface and each 1,000-foot level. The temperature difference from standard for 1,000-foot levels is used to determine the level or altitude of initial cruise

for maximum fuel consumption for jet aircraft. It also provides the forecaster with the temperature value of the existing air mass in relation to the standard atmosphere.

Column 10, TEMP L/R (Temperature Lapse Rate). The temperature lapse rate is computed and printed to the nearest tenth of a degree centigrade. The temperature lapse rate is the difference between the temperature at a given altitude (1,000 feet through 50,000 feet) and the temperature at an altitude 1,000 feet below. Temperature lapse rate provides the forecaster with a value of atmospheric stability from 1,000-foot through 50,000-foot altitude.

Column 11, T-TD DIFF (Temperature/Dew Point Temperature Spread). The temperature/dew point temperature spread is computed and printed to the nearest tenth of a degree centigrade. Temperature/dew point spread is the difference between the temperature and the dew point temperature. Temperature/dew point temperature spread provides the forecasters with a relative atmospheric moisture value from surface through 50,000 feet.

Column 12, WEATHER INV (Temperature Inversions). Temperature inversions are identified whenever the temperature lapse rate is equal or more positive than -1.8° C/per 1,000 feet for three or more consecutive 1,000-foot levels, except when the inversion occurs at an altitude of 1,000 feet. Inversions are identified (PRINTED) as subsidence (SUB) or dry type inversions if the temperature/dew point spread increases by 5° C or more from the preceding (lower) level within the inversion, or if the dew point temperature is missing (99.9) throughout the entire inversion. All other inversions are identified (PRINTED) as moist (MST) inversions.

a. Radiation Inversions.

RDN (Radiation Inversion): All inversions occurring at an altitude of 1,000 feet are identified as radiation inversions.

b. Dry Inversions.

SUB (Subsidence Inversions): All dry inversions which occur from 2,000 feet through 50,000 feet inclusively are identified as subsidence inversions.

c. Moist Inversions.

MST (Moist Inversion): All moist inversions which occur from 2,000 feet through 50,000 feet inclusively are identified as moist inversions.

Column 13, CLOUD AMT (Total Amount of Clouds in Tenths). The total tenth of clouds is computed and printed for each 1,000-foot level. The amount of clouds in tenths is based on emperical values of temperature/dew point temperature spread. Table I lists the emperical values for amount of cloud (tenths) corresponding to temperature/dew point spread value:

Table I - Emperical Values

Temp/Dew Point Spread	Cloud Amount
.0 thru .5	1.0
.6 thru .7	.9
.8 thru .9	.8
1.0 thru 1.2	.7
1.3 thru 1.5	.6
1.6 thru 1.9	.5
2.0 thru 2.3	.4
2.4 thru 2.8	.3
2.9 thru 3.6	.2
3.7 thru 5.0	.1
5.1 thru 6.5	H+
6.6 thru 8.5	H-

The clouds in tenths provide the forecaster with a relative value of the amount of clouds he could expect at a given level during the time of the sounding. Further study is planned to provide probabilities of cloud amount (tenths) relative to temp-reature dewpoint spreads.

Column 14, CLOUD TY (Cloud Type). Whenever one-tenth or greater amount of cloud has been computed, the type of cloud is also identified. The type of cloud is based on the stability of the atmosphere. If the lapse rate for any 1,000-foot level is equal to or more positive than -1.8°C, the cloud type is identified as stratus. If the lapse rate for any 1,000-foot level is equal to or more negative than -1.9°C, the cloud type is identified as cumulus. A study on the probability of cloud type relative to temperature lapse rates is planned.

Column 15, TURBC KT (Shear in Knots). The shear in knots per 1,000 feet is computed and printed for each 1,000-foot level. This provides the forecaster with a numerical value of turbulence.

Column 16, TURBC IN (Turbulence Intensity). Turbulence intensity is printed as severe (SV), moderate (MD), and light (LT). These intensity terms are "the generally accepted" and based on the following shear values:

SHEAR (KNOTS/1,000 FEET)		TURBULENCE INTENSITY
4 and 5	=	LT (Light)
6 thru 10	=	MD (Moderate)
[illegible] or greater	=	SV (Severe)

CCL (Convection Condensation Level). The convection condensation level is computed and printed on the last line of the analysis. The convection condensation level is the height to which a parcel of air, if heated sufficiently from below, will rise adiabatically until it is just saturated (condensation starts). It is generally the height of the base of cumuliform clouds which are or would be produced by thermal convection solely from surface heating. The average saturated mixing ratio for the layer of air from the surface to 3,000 feet is computed and the CCL is then located on a sounding at the intersection of the average saturated mixing ratio with the temperature (See Figure 3).

CT (Convection Temperature). The convection temperature is computed and printed on the last line of the analysis immediately following the CCL. The convection temperature is the surface temperature that must be reached to start the formation of convection clouds by solar heating of the surface layer of air. The convection temperature (surface temperature) is located on a sounding at the intersection of the CCL potential temperature (dry adiabet line) and the surface pressure. (See Figure 3).

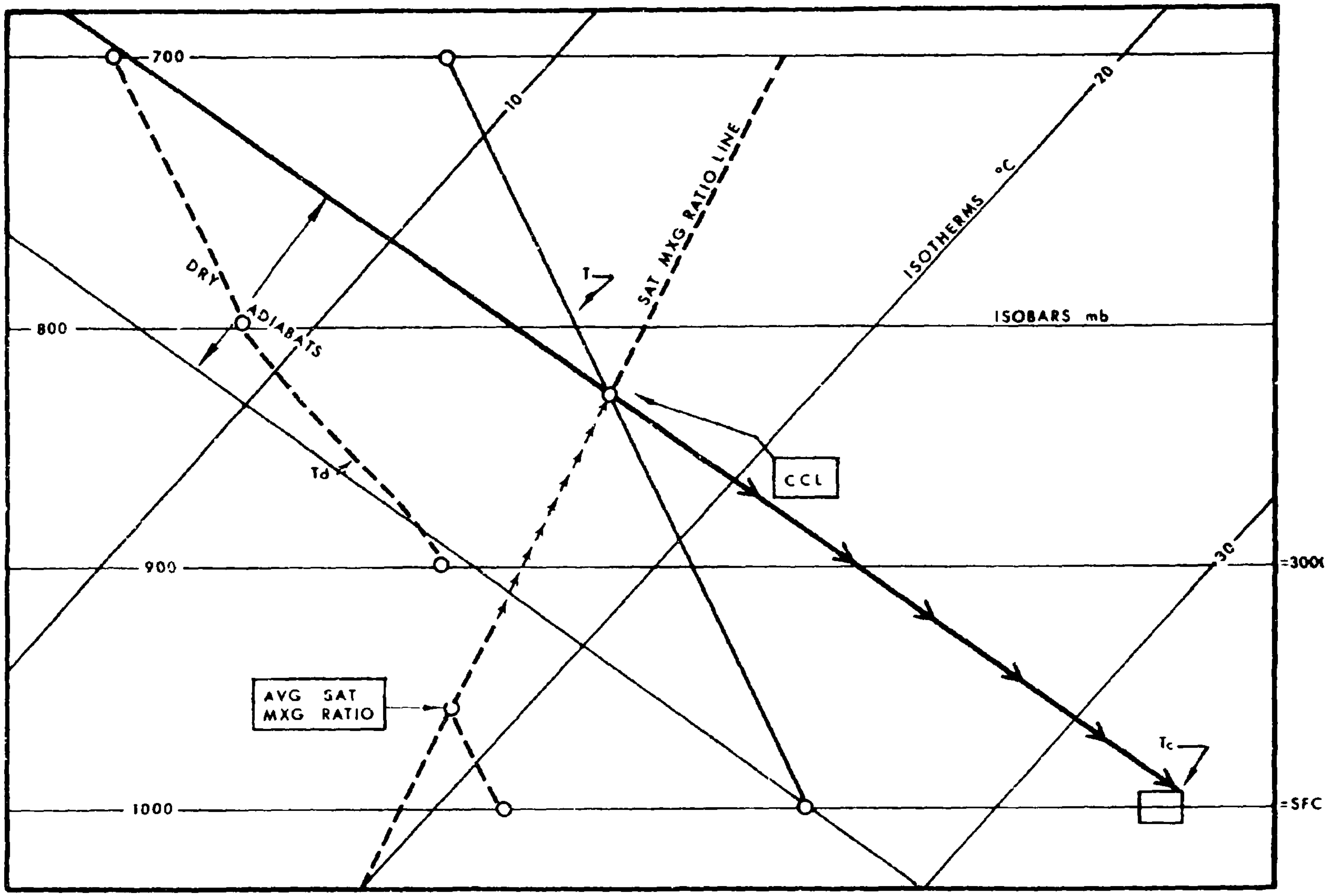

Fig. 3. Procedure for Locating the Convection Condensation Level and the Convection Temperature.

SECTION III

CONCLUSION

The Computerized Rawinsonde Analysis has been used extensively since May 1967 by the duty forecasters at Patrick Air Force Base, Florida, and the Cape Kennedy Forecast Facility. It has proven to be an invaluable aid in providing forecasts for flight and missile weather briefings. All of the commonly used parameters normally obtained from the SKEW-T diagram are readily available on a single teletype message. Use of the analysis eliminates any differences that might occur when forecasters manually compute the various parameters for each individual flight briefed. The usefulness of the analysis has been aptly described by one of the forecasters who said: "To do without it would be like trading a new Cadillac for a Model T Ford".

The computerized analysis printout is considered only a start toward producing more usable and effective techniques in analyzing atmospheric soundings. It appears evident that computer analysis should provide more consistent data in less time which should result in more accurate forecasts, and at the same time reduce the forecaster workload. It is hoped that this paper will create some interest in those units that have computer facilities in furthering the development of more effective techniques in analysis of data.

APPENDIX I

SUMMARY OF COMPUTERIZED RAWINSONDE ANALYSIS

1 SIG LVL	2 ALT FT.	3 DIR DEG	4 SP KT	5 6 CLIMB WINDS	7 CLIMB T-DEV	8 TEMP DEG C	9 TEMP /STD	10 TEMP L/R	11 T/TD DIFF	12 INV TYP	13 CLOUDS AMT	14 CLOUDS TY	15 TURBC KT	16 TURBC IN
XWD										MST		ST		SV
TRP										SUB		CU		MD
SHR										RDN		HZ		LT
FRZ														
SFC														

COLUMN	CODE	CODE IDENTIFICATION	EXPLANATION
1	SIG LVL	Significant Level	TRP = Tropopause FRZ = Freezing Lvl XWD = Max Wind Spd SHR = Max Shear Lvl
2	ALT FT	Altitude	In 1,000 ft levels
3	DIR DEG	Wind Direction	To nearest degree
4	SPD KTS	Wind Speed	To nearest knot
5& 6	CLIMB WINDS	Climb Winds	Cumulative Average for wind direction and speed from SFC to climb altitude
7	CLIMB T/DEV	Climb Temperature	Cumulative Average of deviation of temp and standard temp from SFC to climb alt
8	TEMP-C-	Atmosphere Temp	To nearest tenth of degree centigrade
9	TEMP/STD	Temp Less Std Temp	For initial cruise lvl (not for climb)
10	TEMP L/R	1,000' Temp Lapse Rate	To nearest tenth degree centigrade
11	T-TD DIF	Temp/Dew Pt Spread	To nearest tenth degree centigrade
12	WEA INV	Temp Inversions	Whenever lapse rate is equal to or more positive than -1.8°C for any 3000' layer
		Radiation Inv	RDN-Radiation Inversion-at the 1000' alt
		Dry Inversion	An inversion where(temp/dpt spread)change per 1000' is > 5°C & is 2000' and above
		Moist Inversion	An inversion where (temp/dpt spread)change per 1000' is ≤ 5°C & is 2000' and above
13	WEA AMT	Total Cloud Cover	Cloud cover in tenth
14	WEA TY	Cloud Type	Cloud type identified CU-Cumulus-Unstable L/R of -1.9°C to more negative ST-Stratus-Stable L/R of -1.8°C to more positive HZ-Haze-Indicated for all dry inversions
15	TURBC KT	Wind Speed Shear	In knots per 1,000 feet
16	TURBC IN	Turbulence Intensity	Accepted intensity terms LT-Light 4 to 5 knots shear MD-Moderate 6 thru 10 knots shear SV-Severe 11 knots or greater shear

LAST LINE OF SOUNDING

CCL - Convection condensation level to nearest foot

CT - Convection temperature in degrees centigrade

APPENDIX II

1967 RAWINSONDE ANALYSIS

ALT FT	DIR DEG	SPD KTS	MEAN WIND		TEMP -C-	TEMP L/R	T-TD DIFF	ENERGY ERG/GM	ACC-EN ERG/GM	SHR /5K	ADV D/5K
50000	278	81	269	44	-70.6	-.3	99.9	-31.47	-351.50	5	0
49000	279	85			-70.3	-2.2	99.9	-29.01	-320.03		
48000	278	88			-68.1	-.4	99.9	-27.38	-291.02		
47000	278	88			-67.7	-.5	99.9	-23.98	-263.64		
46000	278	86			-67.2	-1.9	99.9	-21.63	-239.66		
45000	278	84	267	40	-65.3	-2.5	99.9	-20.90	-218.03	6	-4
44000	279	82			-62.8	-2.1	99.9	-19.76	-197.13		
43000	278	82			-60.7	-1.6	99.9	-18.46	-177.37		
42000	276	81			-59.1	-1.4	99.9	-16.57	-158.91		
41000	274	80			-57.7	-1.2	19.4	-14.36	-142.34		
40000	272	79	265	35	-56.5	-2.1	19.8	-12.48	-127.98	19	-5
39000	270	76			-54.4	-2.0	19.6	-11.31	-115.50		
38000	269	72			-52.4	-1.5	19.7	-9.79	-104.19		
37000	268	67			-50.9	-2.1	19.7	-8.18	-94.40		
36000	267	60			-48.8	-2.0	19.0	-7.09	-86.22		
35000	265	54	263	30	-46.8	-1.8	18.7	-5.75	-79.13	14	5
34000	265	49			-45.0	-2.6	18.5	-4.89	-73.38		
33000	267	44			-42.4	-2.4	20.4	-4.41	-68.49		
32000	269	41			-40.0	-3.0	99.9	-4.25	-64.08		
3---00	270	40			-37.0	-2.5	99.9	-4.10	-59.83		
30000	268	40	262	27	-34.7	-2.8	99.9	-3.91	-55.73	8	-12
29000	265	41			-31.9	-2.4	99.9	-3.83	-51.82		
28000	261	41			-29.5	-2.5	99.9	-3.61	-47.99		
27000	257	40			-27.0	-2.2	99.9	-3.39	-44.38		
26000	256	39			-24.8	-1.9	99.9	-2.86	-40.99		
25000	257	39	263	25	-22.9	-1.8	99.9	-2.18	-38.13	7	10
24000	261	39			-21.1	-2.1	99.9	-1.71	-35.95		
23000	265	40			-19.0	-2.4	99.9	-1.67	-34.24		
22000	268	41			-16.6	-2.2	99.9	-1.76	-32.57		
21000	267	41			-14.4	-1.9	99.9	-1.65	-30.81		
20000	265	40	262	22	-12.5	-1.8	99.9	-1.40	-29.16	7	6
19000	264	38			-10.7	-1.7	99.9	-1.10	-27.76		
18000	265	35			-9.0	-1.6	99.9	-.77	-26.66		
17000	268	33			-7.4	-1.8	10.9	-.56	-25.89		
16000	271	33			-5.6	-1.6	12.7	-.41	-25.33		
15000	274	34	260	17	-4.0	-1.9	4.9	-.39	-24.92	11	0
14000	274	35			-2.1	-2.4	3.3	-.85	-24.53		
13000	273	32			.3	-2.0	4.1	-1.41	-23.68		
12000	273	27			2.3	-1.7	7.8	-1.63	-22.27		
11000	274	22			4.0	-2.0	9.1	-1.87	-20.64		
10000	276	18	246	12	6.0	-2.1	11.5	-2.35	-18.77	6	-18
9000	275	18			8.1	-1.9	19.2	-2.79	-16.42		
8000	274	18			10.0	-2.0	29.2	-3.18	-13.63		
7000	270	19			12.0	-1.3	32.6	-3.27	-10.45		
6000	258	20			13.3	.5	22.7	-2.09	-7.18		
5000	242	20	214	11	12.8	.1	12.4	-.31	-5.09	19	-74
4391					12.7			.12	-4.78		
4000	228	18			12.7	-2.2	2.0	.29	-4.90		
3096					14.6			0.00	-5.19		
3000	220	15			14.9	-2.6	2.8	-.26	-5.19		
2000	198	11			17.5	-1.8	3.4	-1.05	-4.93		
1000	168	11			19.3	1.6	4.4	-3.88	-3.88		
16	130	4			17.7		1.3				

CCL I 3096-ALT 14.6-TEMP 913.4-PRESS

CONVECTIVE TEMP I 23.8

BT

1968 RAWINSONDE ANALYSIS

SIG LVL	ALT FT.	DIR DEG	SPD KTS	MEAN WIND		TEMP ←C↖	TEMP DEV	TEMP L/R	T↑TD DIF	TURB SHR	TURB INT	WEATHER INV	AMT	CLD
	50000	292	49	282	28	↑64.2	4.6	↑1.1	99.9	.007	LT		0	
	49000	289	52	282	27	↑63.1	4.8	↑1.4	99.9	.003			0	
	48000	288	54	281	27	↑61.7	5.0	↑1.0	99.9	.003			0	
	47000	288	55	281	26	↑60.7	5.3	↑1.1	99.9	.003			0	
	46000	287	57	281	26	↑59.6	5.5	↑1.2	99.9	.003			0	
	45000	288	59	281	25	↑58.4	5.7	↑1.2	99.9	.003			0	
	44000	289	60	280	24	↑57.2	5.8	↑0.9	99.9	.002			0	
	43000	288	60	280	23	↑56.3	6.0	↑0.5	99.9	.004			0	
	42000	286	60	279	23	↑55.8	6.1	.7	99.9	.002			0	
	41000	284	60	279	22	↑56.5	6.2	↑0.1	99.9	.004			0	
	40000	282	59	279	21	↑56.4	6.4	↑0.6	99.9	.008	LT		0	
	39000	278	58	278	20	↑55.8	6.6	↑0.7	99.9	.007	LT		0	
TRP	38000	274	55	279	19	↑55.1	6.7	↑2.1	99.9	.005			0	
	37000	275	52	279	18	↑53.0	6.9	↑1.6	99.9	.007	LT		0	
	36000	278	50	279	17	↑51.4	7.0	↑2.6	99.9	.005			0	
	35000	282	50	279	16	↑48.8	7.0	↑2.5	99.9	.004			0	
	34000	284	52	279	15	↑46.3	7.1	↑2.0	99.9	.001			0	
	33000	284	52	279	14	↑44.3	7.1	↑2.5	99.9	.006			0	
	32000	280	50	278	13	↑41.8	7.1	↑2.3	99.9	.008	LT		0	
	31000	275	49	278	12	↑39.5	7.1	↑1.7	99.9	.005			0	
	30000	272	48	279	11	↑37.8	7.2	↑2.2	99.9	.005			0	
	29000	274	45	280	10	↑35.5	7.2	↑2.4	99.9	.011	MD		0	
	28000	278	39	281	8	↑33.2	7.2	↑1.9	99.9	.015	MD		0	
	27000	279	30	282	7	↑31.3	7.2	↑1.3	99.9	.012	MD		0	
CCL	26971					↑31.2								
	26000	275	23	282	6	↑30.0	7.2	↑2.3	99.9	.007	LT		0	
	25000	268	20	283	6	↑27.7	7.2	↑1.4	99.9	.003			0	
	24000	266	19	285	5	↑26.3	7.2	↑3.2	99.9	.001			0	
	23000	267	18	288	5	↑23.1	7.3	↑2.7	99.9	.003			0	
	22000	272	19	291	4	↑20.4	7.3	↑2.1	99.9	.004			0	
	21000	281	19	296	4	↑18.3	7.2	↑2.3	99.9	.003			0	
	20000	286	18	299	3	↑16.0	7.2	↑1.9	99.9	.003			0	
	19000	290	17	304	2	↑14.1	7.1	↑2.0	99.9	.004			0	
	18000	293	15	309	2	↑12.1	7.0	↑2.4	99.9	.005			0	
	17000	292	12	319	1	↑9.7	6.9	↑1.5	99.9	.004			0	
	16000	287	10	337	1	↑8.2	6.8	↑1.8	99.9	.002			0	
	15000	281	9	13	0	↑6.4	6.7	↑2.2	9.5	.001			0	
	14000	280	9	46	1	↑4.2	6.6	↑1.8	11.4	.002			0	
FRZ	13000	284	8	65	1	↑2.4	6.5	↑2.6	15.3	.003			0	
	12000	294	6	74	2	.2	6.3	↑2.1	11.4	.002			0	
CCL	11214					1.8								
	11000	301	5	81	2	2.3	6.1	↑1.4	10.8	.001			0	
	10000	294	5	85	3	3.7	5.9	↑0.5	11.0	.002		SUBS	0	HAZE
	9000	282	4	89	4	4.2	5.6	.3	15.2	.002		SUBS	0	HAZE
	8000	268	4	90	5	3.9	5.4	↑2.4	8.8	.003			0	
	7000	240	2	90	6	6.3	5.5	↑2.3	6.2	.005			0	
CCL	6191					5.6								
	6000	159	3	88	7	8.6	5.6	↑1.9	2.2	.004			.4	CU
	5000	134	5	85	8	10.5	5.6	↑1.8	.4	.004			1.0	CU
	4000	113	6	81	9	12.3	5.6	↑1.8	1.3	.007	LT		.6	CU
	3000	90	9	77	10	14.1	5.7	↑2.3	1.8	.008	LT		.5	CU
CCL	2584					15.1								
	2000	79	13	73	11	16.4	5.9	↑1.8	2.3	.003			.4	CU
	1000	76	15	70	10	18.2	6.2	↑4.1	5.0	.014	MD		.1	CU
SFC	16	60	7			22.3			5.8					

CONVECTIVE TEMP 1 15.1C ← 59.1F↖
CONVECTIVE TEMP 2 5.6C ← 42.1F↖
CONVECTIVE TEMP 3 1.8C ← 35.3F↖
CONVECTIVE TEMP 4 ↑31.2C ←↑24.2F↖

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13. ABSTRACT

This report is intended as a guide to forecasters using the Air Force Eastern Test Range computer "printed" rawinsonde (SKEW-T) analysis. Each meteorological parameter included in the computer printout is described to some extent as to what it is, how it is computed and developed, why it is included in the analysis, and its relationship to a SKEW-T analysis.

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14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Radiosonde						
Meteorological Charts						
Meteorological Computer Analysis						